Service Schematics



Introduction

IMPORTANT:

This document is intended for use by authorized NOKIA service centers only.

“Service Schematics” was created with focus on customer care.
The purpose of this document is to provide further technical repair information for NOKIA mobile phones on Level 3/4 service activities.
It contains additional information such as e.g. “Component finder”, “Frequency band table” or “Antenna switch table”.
The “Signal overview” page gives a good and fast overview about the most important signals and voltages on board.
Saving process time and improving the repair quality is the aim of this document.
It is to be used additionally to the service manual and other training or service information such as Service Bulletins.

All measurements were made using following equipment:

Nokia repair SW	:	Phoenix version 2005.12.5.90
Oscilloscope	:	Fluke PM 3380A/B
Spectrum Analyzer	:	Advantest R3162 with an analog probe
RF-Generator / GSM Tester	:	Rhode & Schwarz CMU 200
Multimeter	:	Fluke 73 Series II

While every endeavour has been made to ensure the accuracy of this document, some errors may exist. If the reader finds any errors, NOKIA should be notified in writing.

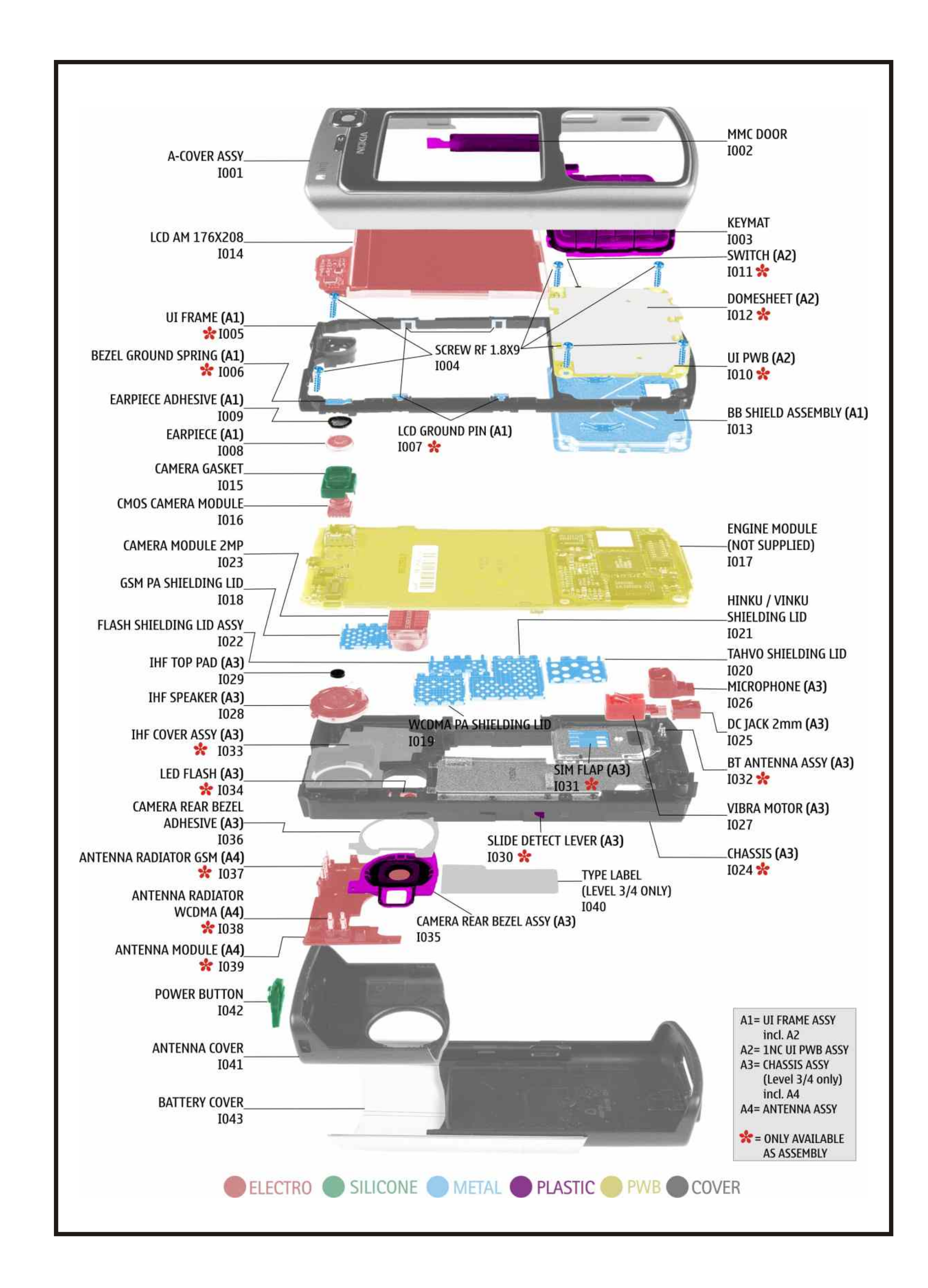
Please send E-Mail to: training.sace@nokia.com

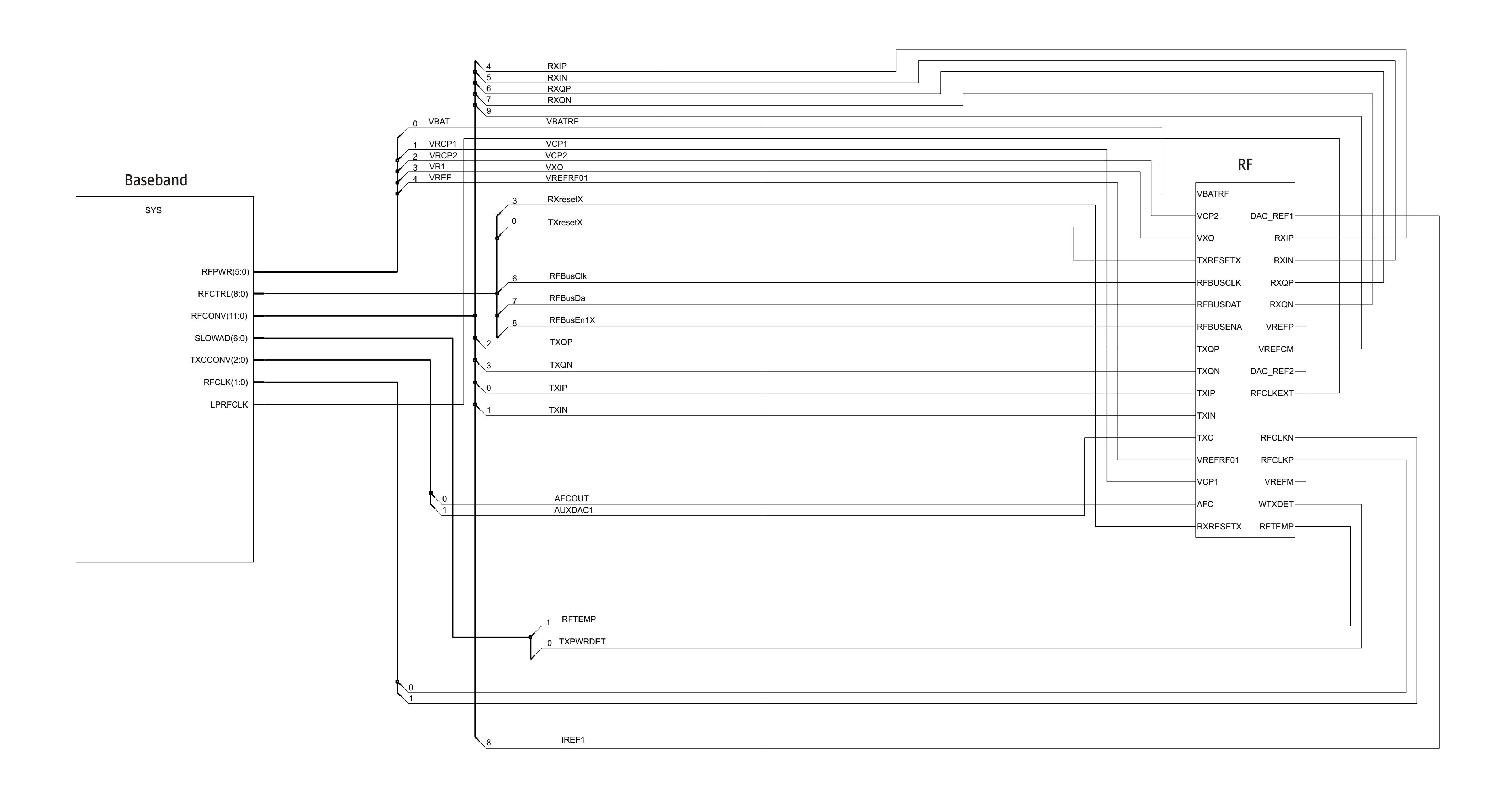
RM-84



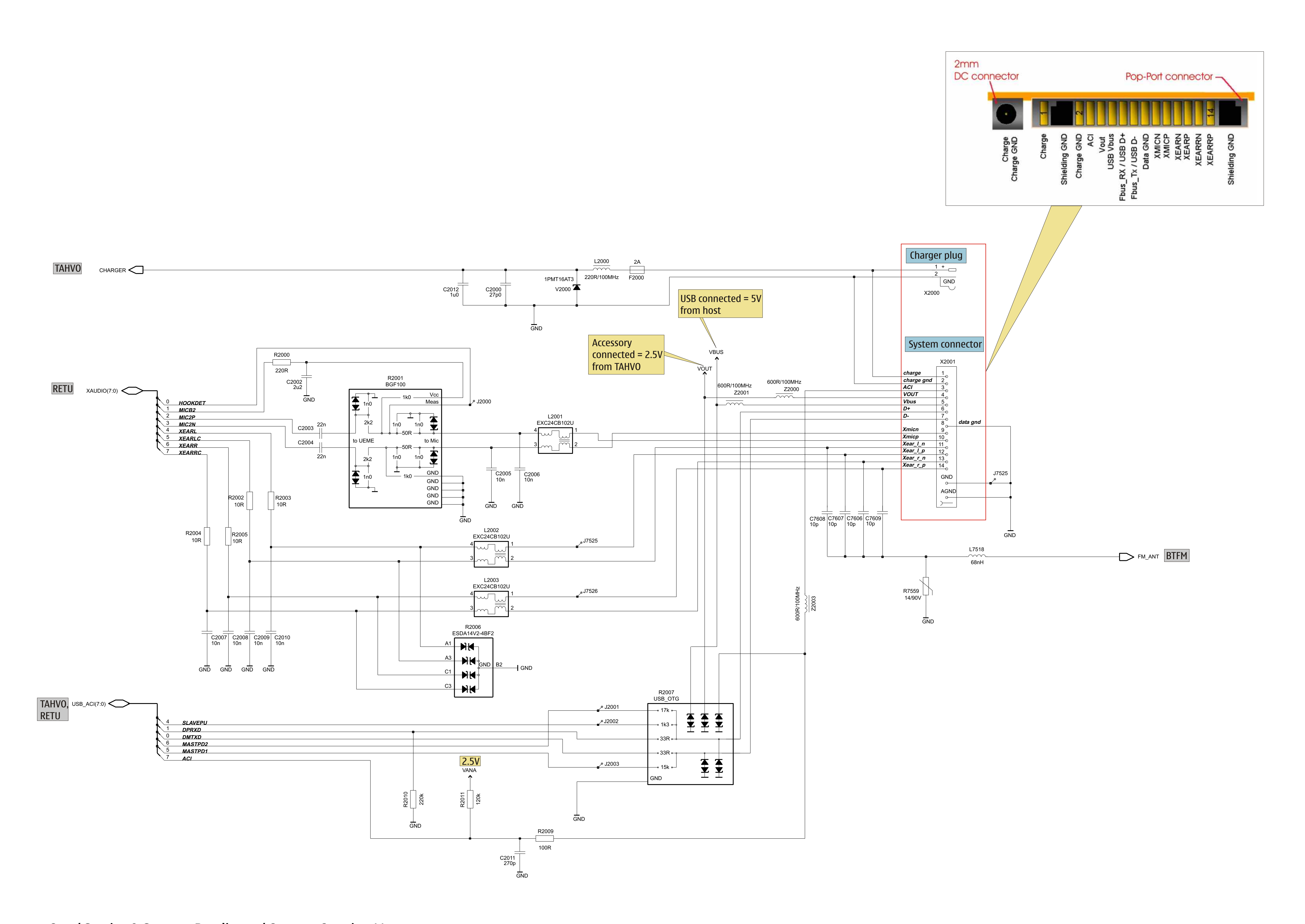
Table of Contents	Page

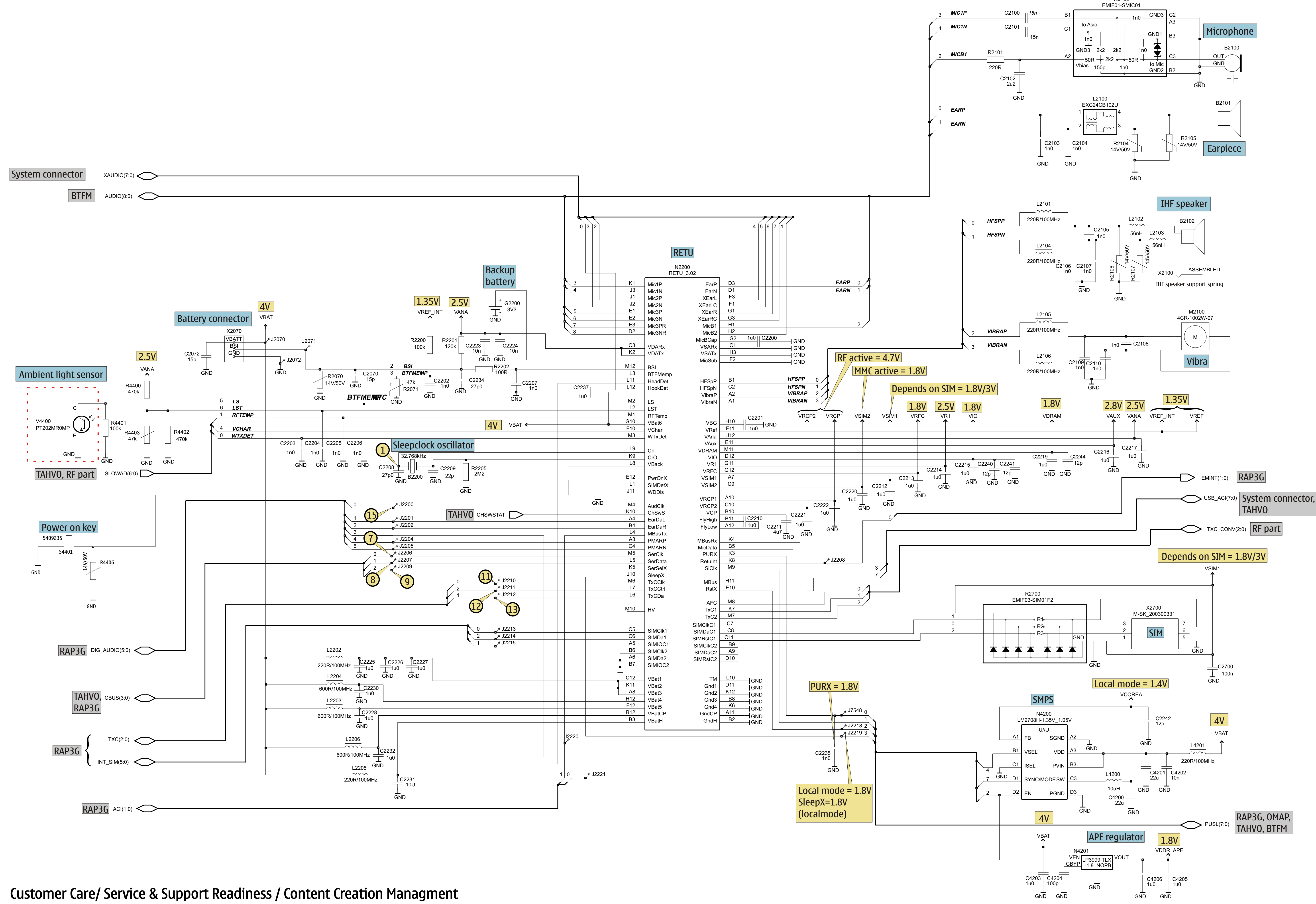
Exploded view and component disposal



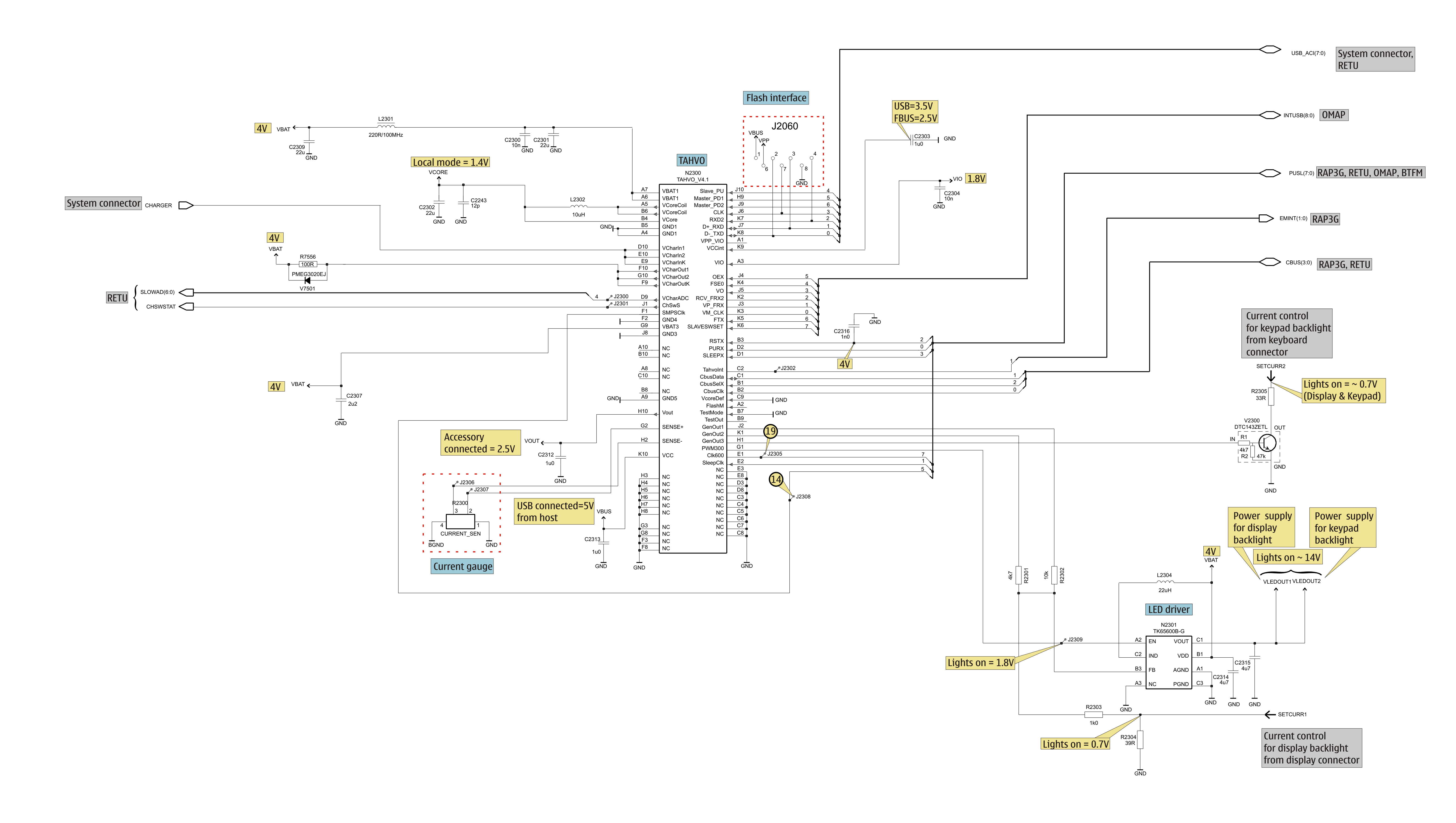


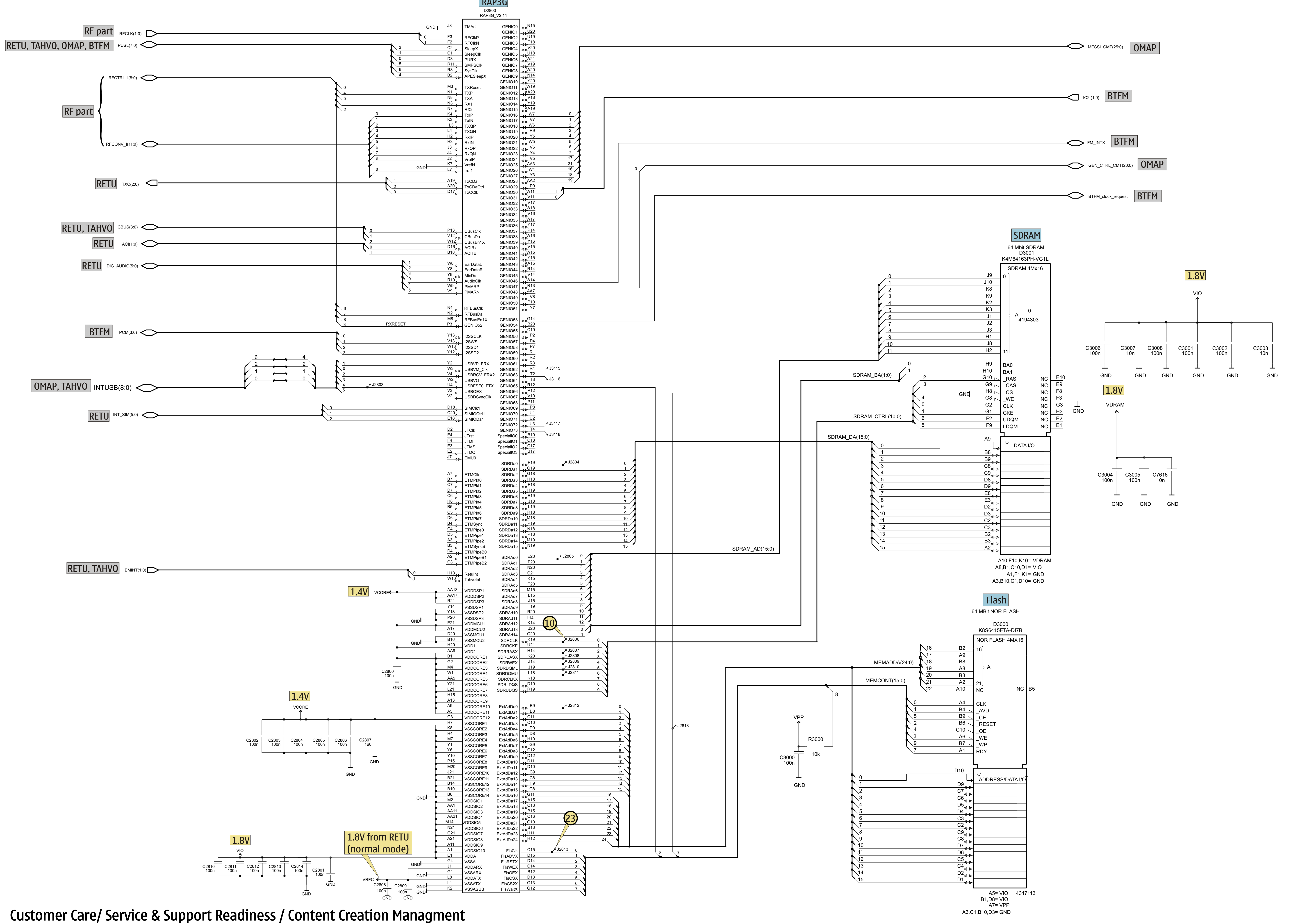
Baseband
SYS
RFPWR(5:0)
RFCTRL(8:0)
RFCONV(11:0)
SLOWAD(6:0)
TXCCONV(2:0)
RFCLK(1:0)
LPRFCLK
4 RXIP
5 RXIN
6 RXQP
7 RXQN
9
0 VBAT VBATRF
1 VRCP1 VCP1
2 VRCP2 VCP2
3 VR1 VXO
4 VREF VREFRF01
3 RXresetX
0 TXresetX
6 RFBusClk
7 RFBusDa
8 RFBusEn1X
2 TXQP
3 TXQN
0 TXIP
1 TXIN
0 AFCOUT
1 AUXDAC1
1 RFTEMP
0 TXPWRDET
0
1
8 IREF1
RF
VBATRF
VCP2
VXO
TXRESETX
RFBUSCLK
RFBUSDAT
RFBUSENA
TXQP
TXQN
TXIP
TXIN
TXC
VREFRF01
VCP1
AFC
RXRESETX
DAC_REF1
RXIP
RXIN
RXQP
RXQN
VREFP
VREFCM
DAC_REF2
RFCLKEXT
RFCLKN
RFCLKP
VREFM
WTXDET
RFTEMP

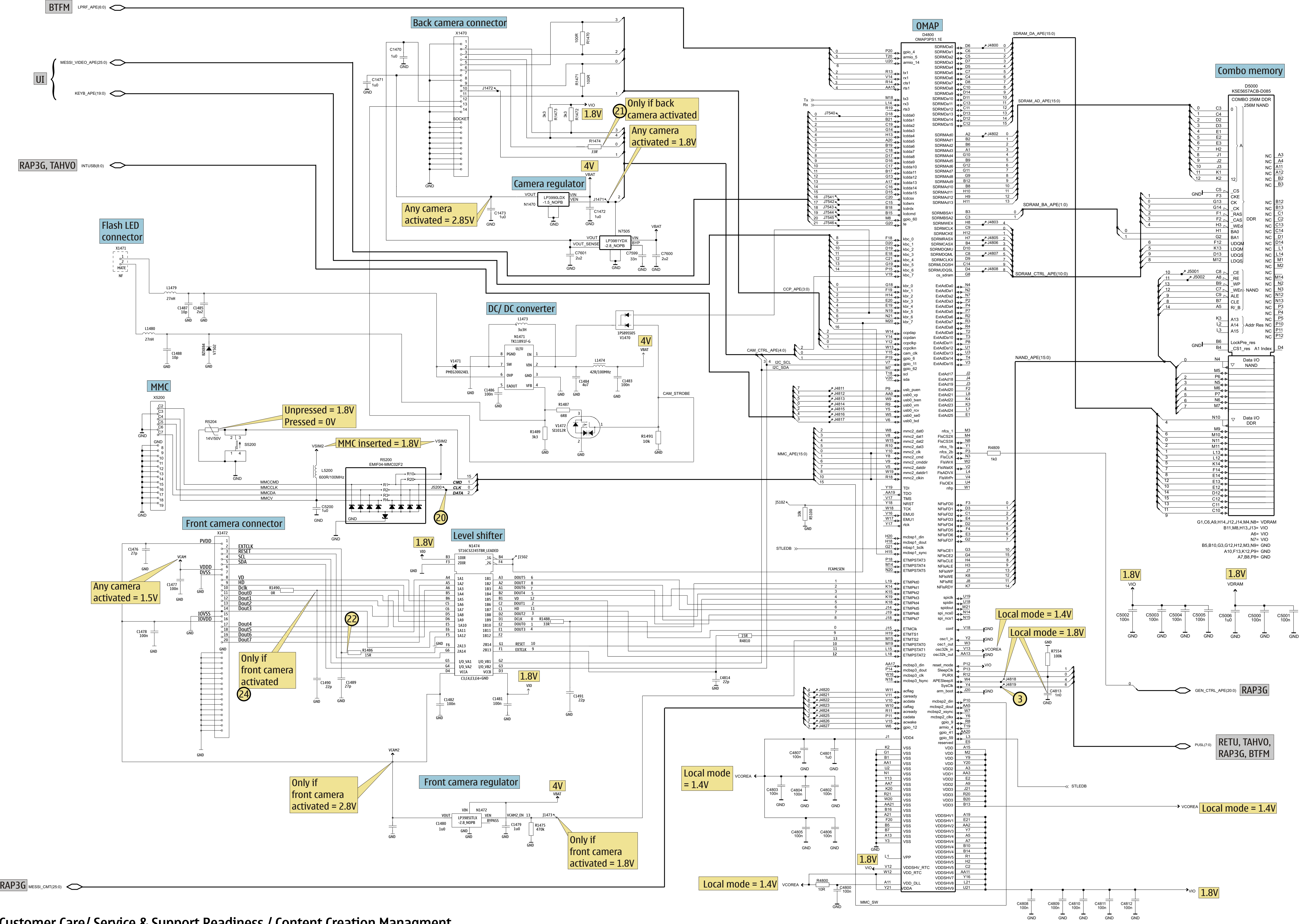

2mm
DC connector
Pop-Port connector
Charge
Charge GND
Charge
Shielding GND
Charge GND
ACI
Vout
USB Vbus
Fbus_RX / USB D+
Fbus_Tx / USB D-
Data GND
XMICN
XMICP
XEARN
XEARP
XEARRN
XEARRP
Shielding GND
Charger plug
System connector
USB connected = 5V from host
Accessory connected = 2.5V from TAHVO
TAHVO
CHARGER
RETU
XAUDIO(7:0)
HOOKDET
MICB2
MIC2P
MIC2N
XEARL
XEARLC
XEARR
XEARRC
TAHVO, RETU
USB_ACI(7:0)
SLAVEPU
DPRXD
DMTXD
MASTPD2
MASTPD1
ACI
BTFM
FM_ANT
2.5V
VANA
VBUS
VOUT
R2001 BGF100
R2006 ESDA14V2-4BF2
R2007 USB_OTG
L2001 EXC24CB102U
L2002 EXC24CB102U
L2003 EXC24CB102U
L2000 220R/100MHz
F2000 2A
V2000 1PMT16AT3
X2000
X2001
to UEME
to Mic
L7518 68nH
R7559 14/90V

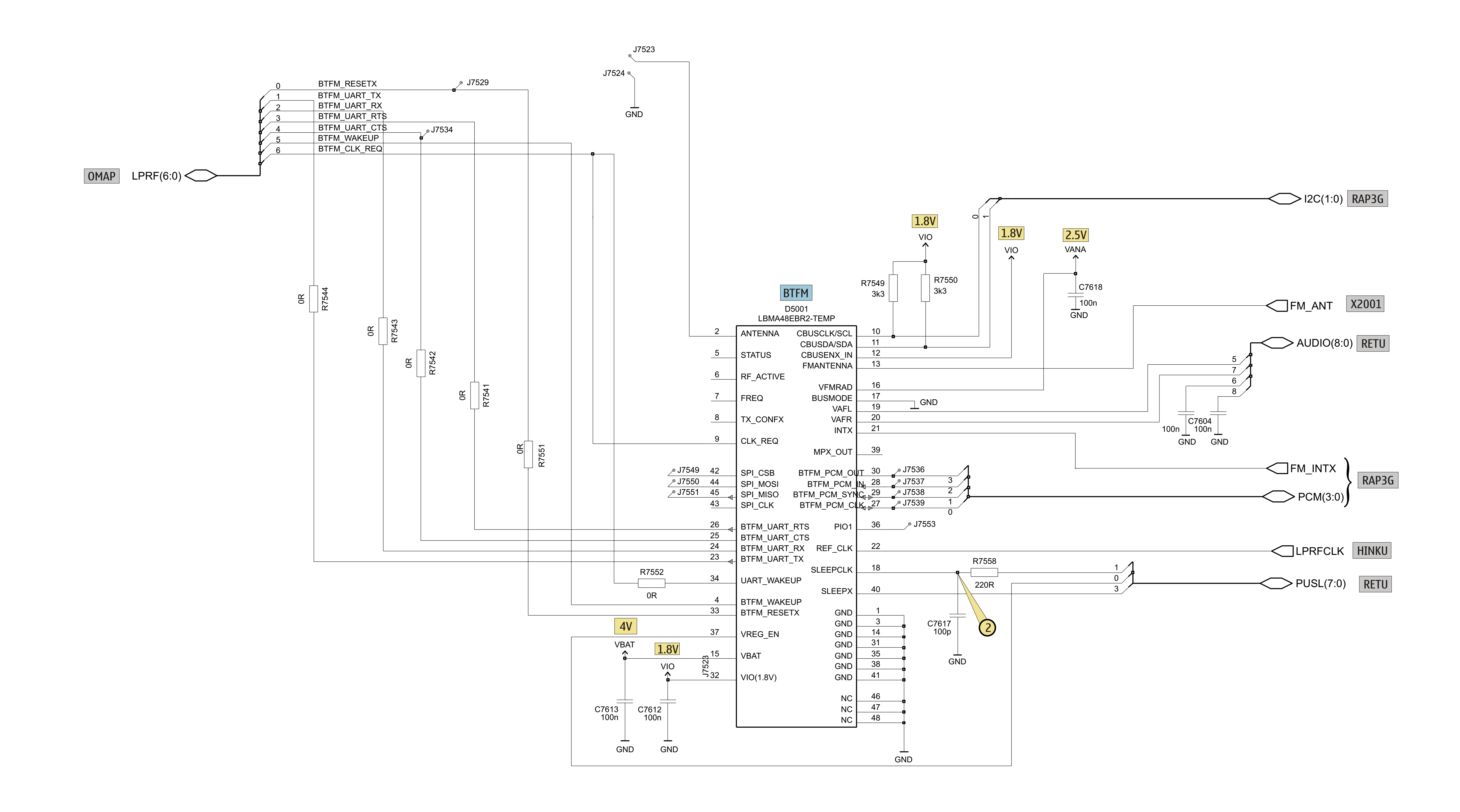


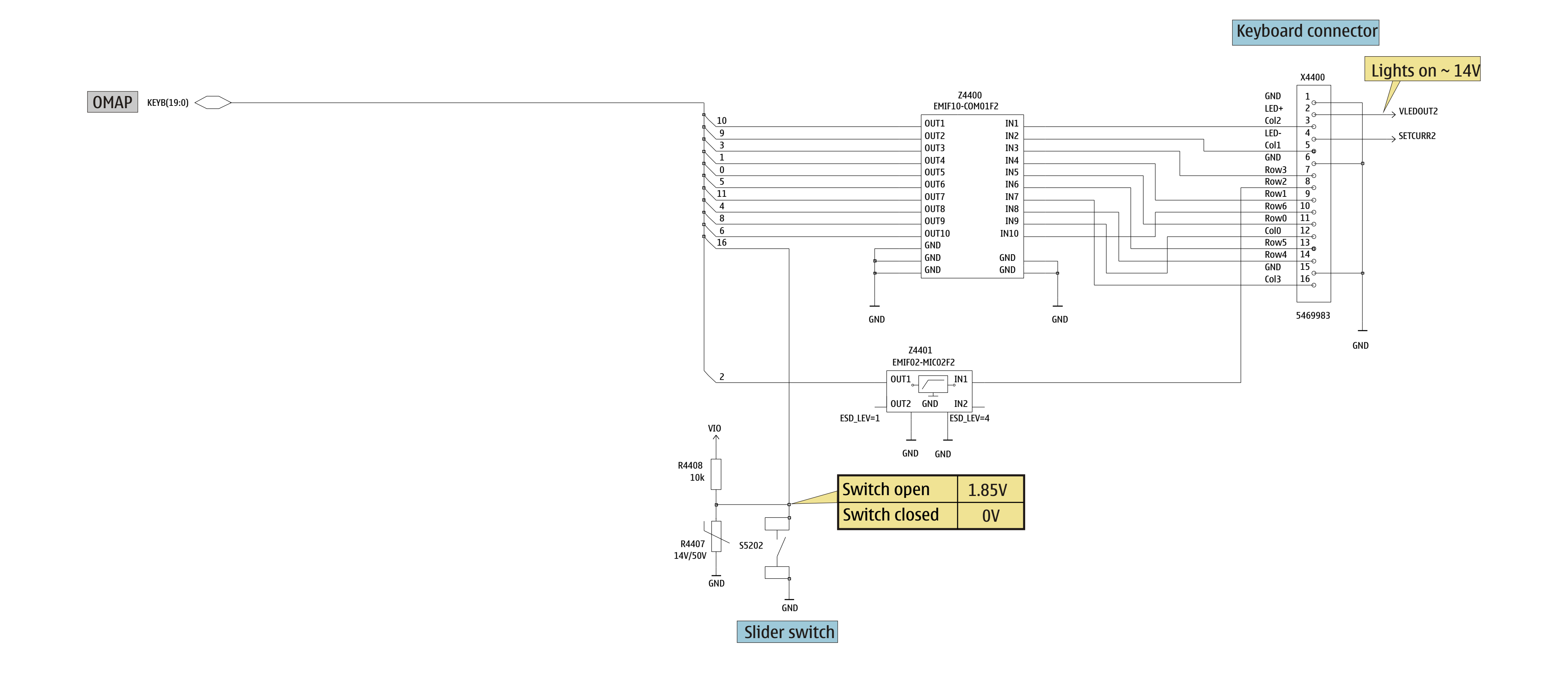
Microphone
R2100
EMIF01-SMIC01
B2100
Earpiece
L2100
EXC24CB102U
B2101
System connector
XAUDIO(7:0)
BTFM
AUDIO(8:0)
IHF speaker
B2102
ASSEMBLED
IHF speaker support spring
X2100
RETU
N2200
RETU_3.02
Backup battery
G2200
3V3
Battery connector
X2070
4V
VBAT
1.35V
VREF_INT
2.5V
VANA
Ambient light sensor
V4400
PT202MR0MP
TAHVO, RF part
SLOWAD(6:0)
Vibra
M2100
4CR-1002W-07
RF active = 4.7V
MMC active = 1.8V
Depends on SIM = 1.8V/3V
1.8V
2.5V
1.8V
1.8V
2.8V
2.5V
1.35V
Sleepclock oscillator
32.768kHz
B2200
Power on key
S401
TAHVO
CHSWSTAT
RAP3G
EMINT(1:0)
USB_ACI(7:0)
System connector, TAHVO
TXC_CONV(2:0)
RF part
Depends on SIM = 1.8V/3V
VSIM1
R2700
EMIF03-SIM01F2
X2700
M-SK_200300331
SIM
DIG_AUDIO(5:0)
TAHVO, RAP3G
CBUS(3:0)
TXC(2:0)
INT_SIM(5:0)
ACI(1:0)
PURX = 1.8V
Local mode = 1.8V
SleepX=1.8V
(localmode)
Local mode = 1.4V
VCOREA
SMPS
N4200
LM2708H-1.35V_1.05V
4V
VBAT
PUSL(7:0)
RAP3G, OMAP, TAHVO, BTFM
APE regulator
N4201
LP3999ITLX-1.8_NOPB
1.8V
VDDR_APE


System connector, RETU
OMAP
RAP3G, RETU, OMAP, BTFM
RAP3G
RAP3G, RETU
Flash interface
J2060
USB=3.5V
FBUS=2.5V
1.8V
4V
Local mode = 1.4V
TAHVO
System connector
RETU
4V
Current control for keypad backlight from keyboard connector
Lights on = ~ 0.7V (Display & Keypad)
Accessory connected = 2.5V
USB connected=5V from host
Current gauge
Power supply for display backlight
Power supply for keypad backlight
Lights on ~ 14V
LED driver
Lights on = 1.8V
Lights on = 0.7V
Current control for display backlight from display connector

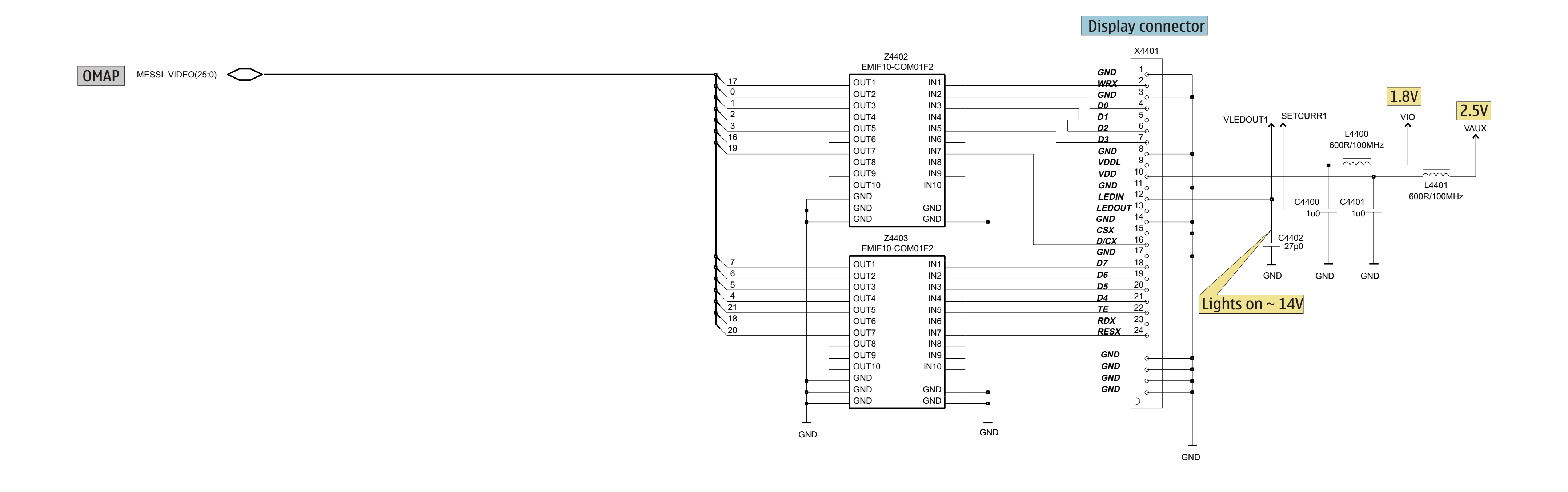

RAP3G
D2800
RAP3G_V2.11
RF part
RETU, TAHVO, OMAP, BTFM
RF part
RETU
RETU, TAHVO
RETU
RETU
BTFM
OMAP, TAHVO
INTUSB(8:0)
RETU
RETU, TAHVO
1.4V
1.4V
1.8V
1.8V from RETU
(normal mode)
OMAP
BTFM
BTFM
OMAP
BTFM
SDRAM
64 Mbit SDRAM
D3001
K4M64163PH-VG1L
SDRAM 4Mx16
1.8V
1.8V
SDRAM_BA(1:0)
SDRAM_CTRL(10:0)
SDRAM_DA(15:0)
SDRAM_AD(15:0)
DATA I/O
A10,F10,K10= VDRAM
A8,B1,C10,D1= VIO
A1,F1,K1= GND
A3,B10,C1,D10= GND
Flash
64 MBit NOR FLASH
D3000
K8S6415ETA-DI7B
NOR FLASH 4MX16
MEMADDA(24:0)
MEMCONT(15:0)
ADDRESS/DATA I/O
A5= VIO
B1,D8= VIO
A7= VPP
A3,C1,B10,D3= GND
VPP
R3000
10k
C3000
100n
10
23


BTFM
UI
RAP3G, TAHVO
Back camera connector
OMAP
Combo memory
Only if back camera activated
1.8V
Any camera activated = 1.8V
4V
Camera regulator
Any camera activated = 2.85V
Flash LED connector
DC/ DC converter
4V
MMC
Unpressed = 1.8V
Pressed = 0V
MMC inserted = 1.8V
Front camera connector
Level shifter
1.8V
Any camera activated = 1.5V
Only if front camera activated
1.8V
Local mode = 1.4V
Local mode = 1.8V
RAP3G
RETU, TAHVO, RAP3G, BTFM
Only if front camera activated = 2.8V
Front camera regulator
4V
Only if front camera activated = 1.8V
Local mode = 1.4V
Local mode = 1.4V
Local mode = 1.4V
1.8V
1.8V
RAP3G

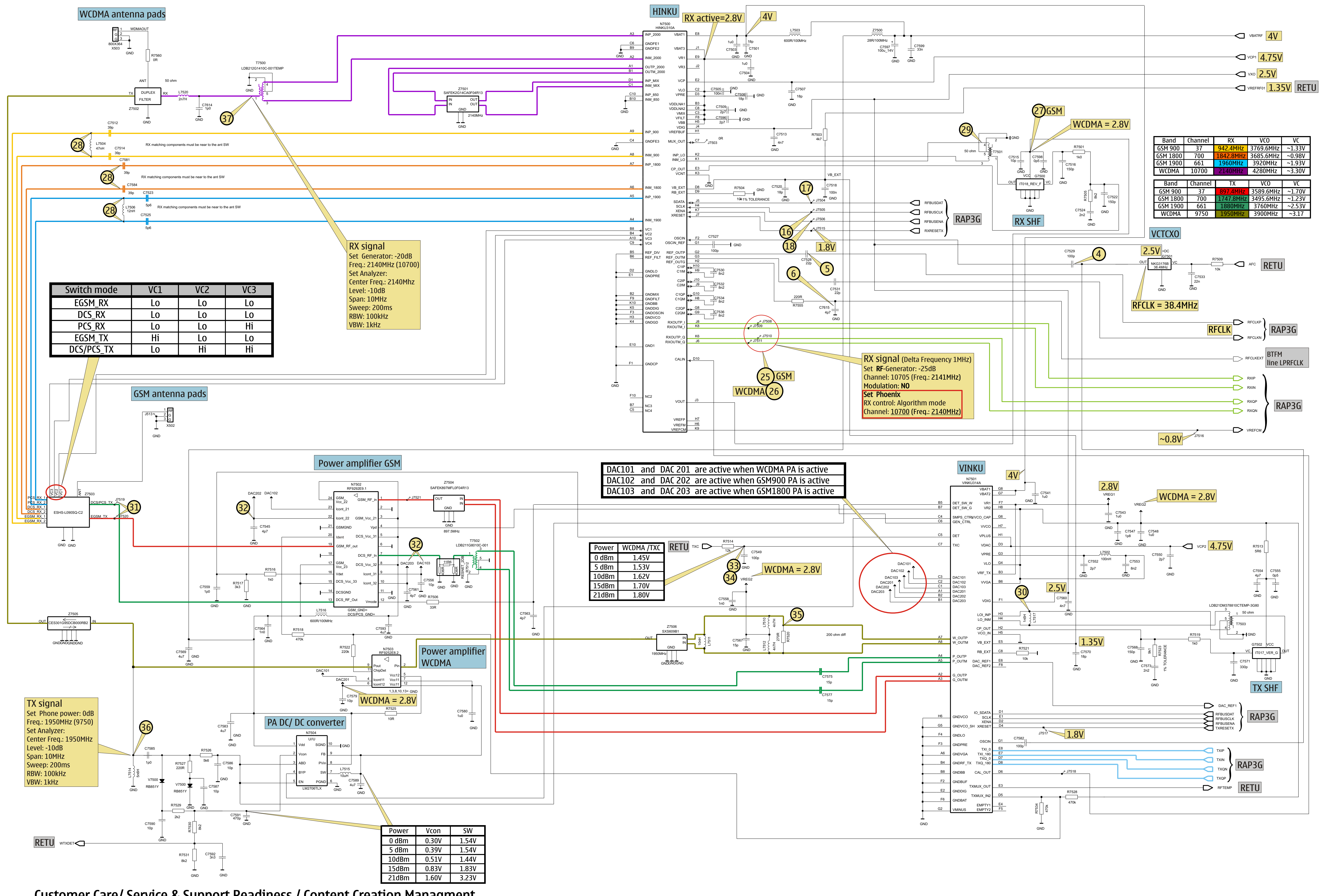

OMAP
LPRF(6:0)
BTFM_RESETX
BTFM_UART_TX
BTFM_UART_RX
BTFM_UART_RTS
BTFM_UART_CTS
BTFM_WAKEUP
BTFM_CLK_REQ
J7529
J7534
J7523
J7524
GND
BTFM
D5001
LBMA48EBR2-TEMP
ANTENNA
STATUS
RF_ACTIVE
FREQ
TX_CONFX
CLK_REQ
SPI_CSB
SPI_MOSI
SPI_MISO
SPI_CLK
BTFM_UART_RTS
BTFM_UART_CTS
BTFM_UART_RX
BTFM_UART_TX
UART_WAKEUP
BTFM_WAKEUP
BTFM_RESETX
VREG_EN
VBAT
VIO(1.8V)
CBUSCLK/SCL
CBUSDA/SDA
CBUSENX_IN
FMANTENNA
VFMRAD
BUSMODE
VAFL
VAFR
INTX
MPX_OUT
BTFM_PCM_OUT
BTFM_PCM_IN
BTFM_PCM_SYNC
BTFM_PCM_CLK
PIO1
REF_CLK
SLEEPCLK
SLEEPX
NC
I2C(1:0)
RAP3G
FM_ANT
X2001
AUDIO(8:0)
RETU
FM_INTX
PCM(3:0)
LPRFCLK
HINKU
PUSL(7:0)
1.8V
VIO
2.5V
VANA
4V
VBAT
R7549 3k3
R7550 3k3
C7618 100n
C7604 100n
R7558 220R
C7617 100p
R7552 0R
C7613 100n
C7612 100n
R7544
R7543
R7542
R7541
R7551
0R
J7549
J7550
J7551
J7536
J7537
J7538
J7539
J7553



Keyboard connector
Lights on ~ 14V
OMAP
KEYB(19:0)
Z4400
EMIF10-COM01F2
X4400
VLEDOUT2
SETCURR2
5469983
Z4401
EMIF02-MIC02F2
VIO
R4408
10k
R4407
14V/50V
S5202
Switch open
1.85V
Switch closed
0V
Slider switch



Display connector
OMAP
MESSI_VIDEO(25:0)
Z4402
EMIF10-COM01F2
Z4403
EMIF10-COM01F2
X4401
VLEDOUT1
SETCURR1
L4400
600R/100MHz
L4401
600R/100MHz
1.8V
VIO
2.5V
VAUX
C4400
1u0
C4401
1u0
C4402
27p0
Lights on ~ 14V



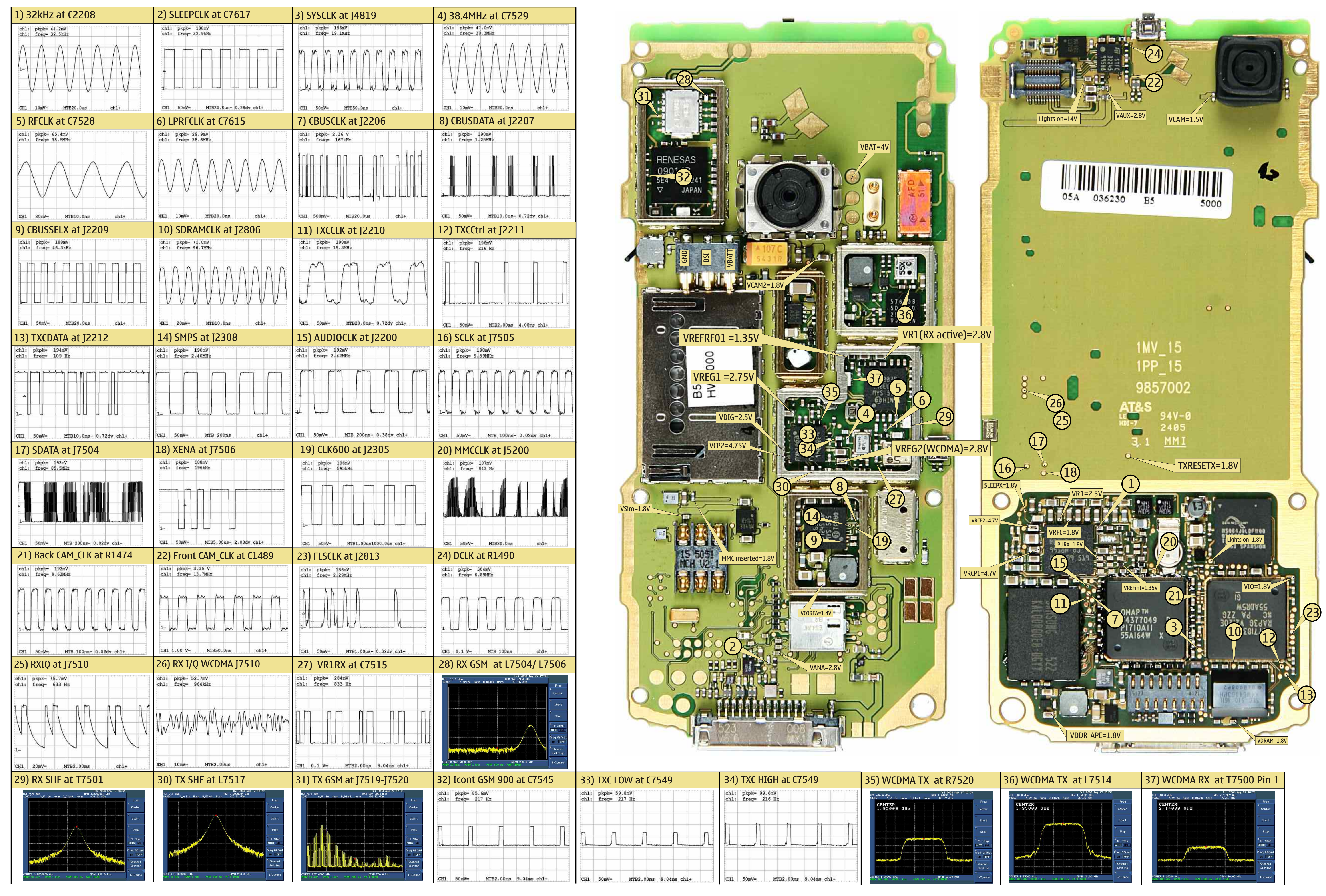
Switch mode	VC1	VC2	VC3
EGSM_RX	Lo	Lo	Lo
DCS_RX	Lo	Lo	Lo
PCS_RX	Lo	Lo	Hi
EGSM_TX	Hi	Lo	Lo
DCS/PCS_TX	Lo	Hi	Hi

Band	Channel	RX	VCO	VC
GSM 900	37	942.4MHz	3769.6MHz	~1.33V
GSM 1800	700	1842.8MHz	3685.6MHz	~0.98V
GSM 1900	661	1960MHz	3920MHz	~1.93V
WCDMA	10700	2140MHz	4280MHz	~3.30V

Band	Channel	TX	VCO	VC
GSM 900	37	897.4MHz	3589.6MHz	~1.70V
GSM 1800	700	1747.8MHz	3495.6MHz	~1.23V
GSM 1900	661	1880MHz	3760MHz	~2.53V
WCDMA	9750	1950MHz	3900MHz	~3.17

Power	WCDMA /TXC
0 dBm	1.45V
5 dBm	1.53V
10dBm	1.62V
15dBm	1.70V
21dBm	1.80V

Power	Vcon	SW
0 dBm	0.30V	1.54V
5 dBm	0.39V	1.54V
10dBm	0.51V	1.44V
15dBm	0.83V	1.83V
21dBm	1.60V	3.23V


1) 32kHz at C2208
2) SLEEPCLK at C7617
3) SYSCLK at J4819
4) 38.4MHz at C7529
5) RFCLK at C7528
6) LPRFCLK at C7615
7) CBUSCLK at J2206
8) CBUSDATA at J2207
9) CBUSSELX at J2209
10) SDRAMCLK at J2806
11) TXCCLK at J2210
12) TXCCtrl at J2211
13) TXCDATA at J2212
14) SMPS at J2308
15) AUDIOCLK at J2200
16) SCLK at J7505
17) SDATA at J7504
18) XENA at J7506
19) CLK600 at J2305
20) MMCCLK at J5200
21) Back CAM_CLK at R1474
22) Front CAM_CLK at C1489
23) FLSCLK at J2813
24) DCLK at R1490
25) RXIQ at J7510
26) RX I/Q WCDMA J7510
27) VR1RX at C7515
28) RX GSM at L7504/ L7506
29) RX SHF at T7501
30) TX SHF at L7517
31) TX GSM at J7519-J7520
32) Icont GSM 900 at C7545
33) TXC LOW at C7549
34) TXC HIGH at C7549
35) WCDMA TX at R7520
36) WCDMA TX at L7514
37) WCDMA RX at T7500 Pin 1
VBAT=4V
VCAM2=1.8V
VREFRF01 =1.35V
VR1(RX active)=2.8V
VREG1 =2.75V
VDIG=2.5V
VCP2=4.75V
VREG2(WCDMA)=2.8V
VSim=1.8V
MMC inserted=1.8V
VCOREA=1.4V
VANA=2.8V
GND
BSI
VBAT
Lights on=14V
VAUX=2.8V
VCAM=1.5V
1MV_15
1PP_15
9857002
TXRESETX=1.8V
SLEEPX=1.8V
VR1=2.5V
VRCP2=4.7V
VRFC=1.8V
PURX=1.8V
Lights on=1.8V
VRCP1=4.7V
VREFint=1.35V
VIO=1.8V
VDDR_APE=1.8V
VDRAM=1.8V
RENESAS
JAPAN

B		C2235	D6	C7508	B10	C7617	F3	J3108	H3	J7544	D5	R1491	E12	R7558	F3
B2200	D6	C2237	E7	C7509	C11	C7618	F3	J3109	H3	J7545	E7	R2000	F3	R7559	G2
C		C2240	B2	C7512	G19	D		J3110	I5	J7546	E6	R2001	F3	R7560	A17
C1470	D15	C2241	G3	C7513	B11	D2800	H4	J3111	H3	J7547	D3	R2002	G3	S	
C1471	F18	C2242	E5	C7514	G19	D3000	H7	J3112	H3	J7548	F4	R2003	G3	S4401	E21
C1472	F6	C2243	I3	C7515	C9	D3001	H2	J3113	G3	J7549	C4	R2004	G3	S5200	I14
C1473	G7	C2244	G1	C7516	C9	D4800	E4	J3114	H3	J7550	E3	R2005	H3	S5202	A9
C1476	I19	C2300	D5	C7518	E9	D5000	B4	J3115	G5	J7551	D3	R2006	G2	T	
C1477	G19	C2301	D6	C7520	C11	D5001	D4	J3116	H6	J7553	F4	R2007	F1	T7500	D11
C1478	I19	C2302	D5	C7522	C9	F		J3117	G6	J7554	H20	R2009	G1	T7501	B10
C1479	E14	C2303	D7	C7523	G18	F2000	C2	J3118	G5	L		R2010	F1	T7502	H16
C1480	D14	C2304	C6	C7524	B9	G		J4800	D3	L1473	E11	R2011	G1	T7503	B7
C1481	D20	C2307	E7	C7525	G18	G2200	F6	J4802	D3	L1474	E7	R2070	G14	V	
C1482	D20	C2309	E5	C7527	B10	G7500	B9	J4803	D3	L1479	C15	R2071	E6	V1470	F14
C1483	E6	C2312	E7	C7528	B10	G7501	C9	J4805	D3	L1480	C15	R2100	F2	V1471	E13
C1484	E12	C2313	E7	C7529	D9	G7502	B7	J4806	D3	L2000	C2	R2101	E2	V1472	E12
C1485	E13	C2314	G7	C7530	B11	J		J4807	D3	L2001	F2	R2104	E19	V2000	C3
C1486	E13	C2315	G6	C7531	C10	J1471	G7	J4808	D3	L2002	G2	R2105	E19	V2300	C7
C1487	C15	C2316	C6	C7532	B11	J1472	F6	J4811	D7	L2003	G2	R2106	F18	V4400	B20
C1488	C15	C2700	H7	C7533	C8	J1473	E14	J4812	G5	L2100	E19	R2107	F18	V7500	C14
C1489	E19	C2800	H3	C7534	B11	J1502	E19	J4813	F3	L2101	B6	R2200	E6	V7501	E6
C1490	E20	C2801	H5	C7536	B11	J2000	F3	J4814	G6	L2102	F18	R2201	E6	V7502	C15
C1491	D19	C2802	I3	C7541	D9	J2001	G1	J4815	H6	L2103	F18	R2202	E6	X	
C2000	C3	C2803	I5	C7543	E10	J2002	G1	J4816	G3	L2104	B6	R2205	E7	X1470	E16
C2002	F3	C2804	G4	C7545	I17	J2003	G1	J4817	G3	L2105	B6	R2301	G6	X1472	H20
C2003	F3	C2805	G3	C7547	D9	J2060	C4	J4818	G3	L2106	A6	R2302	G6	X2001	F1
C2004	G3	C2806	G5	C7548	D8	J2070	C17	J4819	G3	L2202	E7	R2303	F6	X2060	A9
C2005	F2	C2807	H5	C7549	D9	J2071	C16	J4820	G5	L2203	C7	R2304	F6	X2070	H14
C2006	G2	C2808	G4	C7550	E8	J2072	C16	J4821	G5	L2204	D7	R2305	C7	X2700	H6
C2007	G2	C2809	H5	C7552	D8	J2200	D5	J4822	G5	L2205	B5	R2700	I6	X4400	F2
C2008	G2	C2810	G5	C7553	D8	J2201	B7	J4823	G4	L2206	B7	R3000	G6	X4401	B19
C2009	G2	C2811	I5	C7554	B6	J2202	B7	J4824	G5	L2301	E6	R4400	E6	X5200	H11
C2010	G3	C2812	H3	C7555	B6	J2204	B6	J4825	G5	L2302	D5	R4401	E6	X5207	H4
C2011	F1	C2813	I3	C7556	G16	J2205	B7	J4826	G5	L2304	G7	R4402	E6	X5208	B5
C2012	C3	C2814	I3	C7558	E10	J2206	D5	J4827	G4	L4200	C2	R4403	B20	X5209	B4
C2070	G14	C3000	G7	C7559	I18	J2207	C7	J5001	D4	L4201	E2	R4406	E20	X5210	A4
C2072	I15	C3001	I5	C7560	E9	J2208	D8	J5002	D5	L4400	D19	R4407	A8	X5211	A5
C2100	F2	C3002	G6	C7561	G17	J2209	D6	J5100	G5	L4401	D19	R4408	A8	X5212	C16
C2101	F2	C3003	I5	C7563	G17	J2210	D5	J5101	G4	L5200	H7	R4800	D5	Z	
C2102	F2	C3004	H1	C7564	H18	J2211	I3	J5102	G4	L7502	D8	R4809	E3	Z2000	E1
C2103	E6	C3005	I1	C7567	E10	J2212	I3	J5103	F5	L7503	E10	R4810	E6	Z2001	E1
C2104	E6	C3006	I2	C7568	E8	J2213	I3	J5105	G4	L7504	H19	R5100	G5	Z2003	E1
C2105	A6	C3007	H1	C7569	G17	J2214	J3	J5106	H3	L7506	H18	R5200	I7	Z4400	D2
C2106	A6	C3008	I2	C7570	E9	J2215	I3	J5107	H3	L7510	E10	R5204	I15	Z4401	G3
C2107	A6	C4200	D2	C7571	B6	J2218	D6	J5108	F4	L7511	D10	R7501	C9	Z4402	E7
C2108	B6	C4201	D1	C7573	A6	J2219	B7	J5109	F4	L7512	D10	R7503	C11	Z4403	F7
C2109	B7	C4203	B2	C7575	E10	J2220	I3	J5110	F4	L7514	B13	R7504	C11	Z7500	F14
C2110	A7	C4204	C2	C7577	E10	J2221	I4	J513	H20	L7515	C14	R7505	C9	Z7501	C10
C2200	C5	C4205	B5	C7579	A13	J2300	C6	J5200	E5	L7516	G16	R7506	G17	Z7502	B16
C2201	C7	C4206	B1	C7580	A14	J2301	D7	J5404	H3	L7517	E8	R7509	C8	Z7503	H18
C2202	D6	C4400	D19	C7581	G19	J2302	H6	J7503	A10	L7518	G3	R7512	H16	Z7504	I16
C2203	D6	C4401	D19	C7582	D9	J2305	C7	J7504	B8	L7520	D11	R7513	B7	Z7505	B14
C2204	E6	C4402	D19	C7583	D13	J2306	G13	J7505	B8	N		R7514	D9	Z7506	D10
C2205	D5	C4800	D4	C7584	G18	J2307	H13	J7506	B8	N1470	G7	R7516	I18		
C2206	D6	C4801	E2	C7585	B13	J2308	D7	J7508	B11	N1471	E13	R7517	D10		
C2207	E6	C4802	G5	C7586	B14	J2309	G6	J7509	B11	N1472	E14	R7518	I17		
C2208	D7	C4803	G5	C7587	C14	J2802	H3	J7510	B11	N1474	D20	R7519	B6		
C2209	D7	C4804	E5	C7589	D13	J2803	H6	J7511	B10	N2200	C6	R7520	D10		
C2210	B7	C4805	G3	C7590	C13	J2804	I2	J7516	B12	N2300	D7	R7521	D9		
C2211	B6	C4806	E3	C7591	C13	J2805	G1	J7517	E9	N2301	G6	R7522	D12		
C2212	B6	C4807	D4	C7592	C12	J2806	H3	J7518	D9	N4200	D1	R7523	A6		
C2213	C7	C4808	G3	C7593	G16	J2807	H1	J7519	I18	N4201	B2	R7525	C13		
C2214	C7	C4809	G4	C7596	C11	J2808	H3	J7520	I18	N7500	C11	R7526	B14		
C2215	C7	C4810	F3	C7597	F14	J2809	H1	J7521	I16	N7501	E9	R7527	C14		
C2216	D7	C4811	E3	C7598	B8	J2810	H1	J7522	G4	N7502	H17	R7528	C8		
C2217	D7	C4812	E5	C7599	D20	J2812	J4	J7523	H1	N7503	B13	R7529	C13		
C2219	D6	C4813	G4	C7600	B20	J2813	J4	J7524	I2	N7504	C13	R7530	C13		
C2220	B6	C4814	E6	C7601	B20	J2814	J4	J7525	H2	N7505	C20	R7531	C12		
C2221	B7	C5000	B2	C7602	B2	J2815	J4	J7526	H2	R		R7534	C8		
C2222	B6	C5001	D3	C7604	F3	J2816	J4	J7527	I2	R1470	G4	R7541	F4		
C2223	C5	C5002	D4	C7605	F3	J2817	J4	J7529	C4	R1471	G4	R7542	F4		
C2224	D5	C5003	B2	C7606	H2	J2818	H4	J7534	F5	R1472	F3	R7543	F4		
C2225	D7	C5004	D3	C7607	H2	J3100	I5	J7536	C3	R1473	F3	R7544	F5		
C2226	D7	C5005	D5	C7608	H2	J3101	I6	J7537	C3	R1474	G5	R7549	F4		
C2227	B7	C5200	H7	C7609	G2	J3102	I5	J7538	C3	R1475	F7	R7550	F4		
C2228	C7	C7501	C11	C7612	C4	J3103	I5	J7539	D3	R1486	E20	R7551	C4		
C2230	D7	C7503	C11	C7613	F3	J3104	I5	J7540	D5	R1487	E12	R7552	F5		
C2231	A5	C7504	C11	C7614	D11	J3105	I5	J7541	D5	R1488	D19	R7554	G3		
C2232	C7	C7505	B11	C7615	C9	J3106	I5	J7542	D4	R1489	E13	R7555	B9		
C2234	D6	C7507	C10	C7616	F3	J3107	G3	J7543	D5	R1490	E20	R7556	E6		

